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ABSTRACT

As more legislation is passed pertaining to vocational rehabilitation (VR), the VR process becomes increasingly complex. Not only have the populations considered eligible for VR become more diversified, but so have client goals, the range of services offered, and the role of the rehabilitation counselor. This diversification has increased the need for an occupational information system for use by VR practitioners. In addition, the recent surge of technological advancements has increased the need for information pertaining to the ways in which jobs can be accommodated to individuals and vice versa. While many subtle differences exist between VR programs (individualized focus) and traditional manpower programs (aggregate demand focus) at the VR service delivery level, VR is like traditional manpower programs and has a significant need for timely, valid, occupational information. The VR counselor has need for this information, at least at key points in the VR process, including identification of vocational and career interests, selection of a vocational goal, revision of individualized written rehabilitation programs (IWRPs), and placement. To be of maximum use, a VR occupational information system should contain information pertaining to the following areas: geographic detail, current and projected occupational demand, work settings and conditions, education and training, complementary information on topics such as financial assistance, and supply and demand analysis. (MN)

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THE OCCUPATIONAL INFORMATION SYSTEM AND VOCATIONAL REHABILITATION: A CONCEPT PAPER

by

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Prepared for

North Carolina State Occupational Information Coordinating Committee

and

National Occupational Information Coordinating Committee

Research Triangle Institute
North Carolina

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ABOUT NOICC

The National Occupational Information Coordinating Committee (NOICC) and its counterpart State Occupational Information Coordinating Committees (SOICCs) were created by the Education Amendments of 1976 (Public Law 94-482) with a mandate to:

- Development and implement a national, State and local occupational information system to meet the common occupational information needs of vocational education and employment and training program adminstrators and planners, and

- Improve coordination between, and communication among, such administrators and planners, as well as employment security agency administrators, research personnel and others.

The Comprehensive Employment and Training Act (CETA) Amendments of 1978 (Public Law 95-524) call for NOICC to:

- give special attention to the labor market information needs of youth.

The following officials are named in the 1976 law as members of NOICC:

- Commissioner of Education[1],

- Administrator of the National Center for Education Statistics,

- Assistant Secretary for Employment and Training, and

- Commissioner of Labor Statistics.

The members of each SOICC, also specified in the law, are representatives of:

- the State Board administering vocational education,

- the State employment security agency,

- the State employment and training council, and

- the State agency administering the vocational rehabilitation program.

1/ The function of the U.S. Office of Education was moved to the U.S. Department of Education subsequent to the 1976 law.

ACKNOWLEDGEMENTS

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The grant called for the accomplishment of four major tasks:

Task 1. Preparation of a national overview of the need for occupational information through a review of the literature, a summary of State needs assessment studies, interviews with Federal agency staff, and preparation of concept papers by recognized experts in the fields of vocational education, career counselling, CETA program planning, employment service operations and vocational rehabilitation. Reports from Task 1, including this report, are listed on p. iii.

Task 2. Development of an Occupational Information System (OIS) Handbook. This task has resulted in a three volume Handbook:

Volume 1. Occupational Information Development

Volume 2. Occupational Information Analysis, Presentation and Delivery

Volume 3. Technical Addendum

An OIS Handbook Executive Summary has been prepared as well.

Task 3. Development of training materials to accompany the OIS Handbook. The training materials include over 100 pieces of art work suitable for making overhead slides and a trainer's guide designed for use by Federal and State personnel to introduce audiences to the NOICC/SOICC network and the occupational information system.

Task 4. A training conference to introduce the OIS Handbook. Such a conference for States and territories in Federal regions I-5 was held January 6-9, 1981, in Raleigh, North Carolina, and for those in Regions 6-10, January 27-30, 1981, in San Antonio, Texas. Participants in the conferences included representatives of the Federal and State agencies which are members of NOICC and SOICCs, and staff of the SOICCs.

Task I was carried out by Research Triangle Institute, Research Triangle Park, North Carolina. Dr. John E.S. Lawrence and Dr. Alvin M. Cruze served as project managers and authored some of the reports. Tasks 2 and 3 were performed by Program Resources, Incorporated, of Rockville, Maryland. David S. Lipstein, PRI Vice President, served as project director; Harvey Ollis was principal investigator. Task 4 was carried out jointly by RTI and PRI.

Joyce F. Kinnison, Director of the North Carolina SOICC, and Geroge E. Probst, Director of Research for the North Carolina SOICC, served as overall managers of the grant. Carol Kososki, Director of the South Carolina SOICC, and Warren W. Wolff, Director of the Colorado SOICC, provided valuable input and served as reviewers for the project.

Dixie Sommers of the NOICC staff was responsible for monitoring and overseeing the grant, under the supervision of Richard E. Dempsey. Russell B. Flanders, Executive Director of NOICC, provided general direction.

This report, one of the products of Task I, discusses the use of occupational information in vocational rehabilitation. It was prepared by Joseph B. Moriarity, Rehabilitation Research and Training Center, University of West Virginia. The opinions expressed are those of the author and do not necessarily represent policy of NOICC or its member agencies.

Reports on the Need for Occupational Information

Concepts Papers

Occupational Information System and the Employment Security System: A Need and Resources Assessment, Charles E. O'Dell, 1980.

Occupational Information and Vocational Education: A Concept Paper, Donald W. Drewes and Gary R. Bice, 1980.

The Role of an Occupational Informatin System in Career Guidance and Counselling, Edwin L. Herr, 1980.

Occupational Information Needs for CETA Prime Sponsor Policy Making, Planning, and Program Operations, Andrew M. Sum and Paul E. Harrington, 1980.

Occupational Information System and Vocational Rehabilitation: A Concept Paper, Joseph B. Moriarty, 1981.

Literature Review

Data needs and uses of the Context of an Occupational Information System: A Review of the Literature, Nancy Paulson, 1980.

State Needs Assessment

Occupational Information Needs at the State Level: An Empirical Study of Data Needs Assessment Surveys, John E.S Lawrence and John Gross, 1980.

Federal Interviews

Occupational Information Needs at the Federal Level, John E.S. Lawrence and Alvin M. Cruze, 1981.

Final Report

Occupational Information Needs in Selected Public Agencies at the State and National Levels, John E.S. Lawrence, 1981.

Copies of Reports are available from NOICC
2100 M Street, N.W., Suite 714, Washington, D.C. 20037

Chapter 1

OVERVIEW[1]

The earliest action by Congress to provide national policy for rehabilitation of the disabled was in response to the returning veterans of World War I. In 1917 and 1918, bills were also introduced to provide rehabilitation services to people disabled in industry, but the Congress decided to provide rehabilitation only for soldiers.

Several groups testified before the Congress during 1971-1920 on behalf of providing rehabilitation policy for civilians. Among those testifying were the Federal administrators of vocational education, administrators of state rehabilitation programs already operating, the Red Cross Institute for Crippled and Disabled Men, the National Association of Manufacturers, and the American Federation of Labor and the American Association for Labor Legislation. The results of several studies were presented to demonstrate the need for a national policy.[2] Also, the rehabilitation programs in Belgium and in Canada were reviewed to learn more about this idea of re-educating persons with disabilities.[3] After much debate[4] the Civilian Vocational Rehabilitation Act of 1920 (Smith-Fess Act)[5] was passed and on June 2, 1920, President Woodrow Wilson signed it into law.

Since that landmark enactment, there have been several expansions of scope and development of a specialized profession in rehabilitation.[6] The vocational rehabilitation program was amended substantially in 1943, 1954, 1965, 1967, 1968, 1973, 1974, and 1978.

The Smith-Fess Act provided that only those with physical disabilities were eligible for services. The major services provided at that time were counseling, training, provision of prostheses, and placement. The passage of the Social Security Act of 1935[7] made the Smith-Fess Act permanent.

During World War II (1943), the vocational rehabilitation program was expanded to allow physical restoration (medical, surgical, etc.) as a service. The vocational rehabilitation amendments of 1943[8] also removed the reference in the Smith-Fess Act to <u>physical</u> disability, allowing for services to be rendered to mentally ill and retarded persons. Moreover, the definition of "rehabilitation services" was expanded to include any service which would render a disabled person fit to engage in remunerative occupations.

The Vocational Rehabilitation Amendments of 1954 (P.L. 83-565) provided for research, demonstration and training activities. Also, financing was changed to allow a greater weight for per capita income in allotting monies. Project grants for improvement and extension (later called expansion) were set up to induce states to serve a wider range of disability groups.

In 1965, the vocational rehabilitation program (VR) financing was increased to allow greater matching appropriations.[9] Workshops and rehabilitation facilities were the target of new provisions and funding. There were also two major developments in 1965 which impacted the rehabilitation program. The Social Security Act was amended to allow for trust funds to be available for rehabilitation of beneficiaries of old age and survivors disability insurance. Also, expansion of VR into the field of corrections resulted from the Correctional Rehabilitation Study Act of 1965.

Greater expansion of vocational rehabilitation occurred in 1967 when the Congress and the President expanded and extended the vocational rehabilitation act in the basic grant, services to migrant farm workers and their families and eliminated residence as a factor in eligibility determination. Also, the National Center for Deaf-Blind Youths and Adults was established.

The Rehabilitation Act of 1973[10] was the most comprehensive overhaul of vocational rehabilitation since its inception. Smith-Fess had been amended several times, but in 1973, it was discarded and a new act was passed. The new act made several changes in VR policy, a few of which will be mentioned here. The most drastic change in policy, which remains a difficulty in many aspects of the program, is the provision that the most severely disabled will be served first. This meant that state VR agencies had to turn around from producing high numbers of rehabilitants to low closure rates and more severely disabled program participants. Another change required that an individualized written rehabilitation program of services be developed jointly by the counselor and the client. Also, program evaluation standards were mandated to be developed by the Secretary of HEW for determining to what extent the goals of VR were being met. And finally, but not exhaustively, provisions were passed in 1973 to prohibit discrimination against persons with handicapping conditions and to require affirmative action to hire handicapped persons in certain employment settings.

The 1974 amendments[11] to the Rehabilitation Act of 1973 made certain organizational changes in the Rehabilitation Services Administration, provided a definition of a handicapped individual for the affirmative action provisions mentioned above, and expanded the authority of the Architectural and Transportation Barriers Compensation Board. Also, a White House Conference for Handicapped Individuals was held in 1974. The last change in the legislation of vocational rehabilitation came in 1978[12]. Again, major changes occurred. Specifically (but not exhaustively), the changes included the establishment of information and referral programs; establishment of the National Institute of Handicapped Research; establishment of a National Council on the Handicapped; authorized telecommunication research and services; expanded the mission of research to children and to adults over 60 years of age; created a special program of comprehensive services for "independent living"; established a special employment program for handicapped persons; provided for legal fees in civil rights cases under affirmative action provisions; and, mandated several special projects for research and demonstration.[13]

The foregoing summary of the legislative history of vocational rehabilitation is meant to give the reader a general idea of VR's development. It is one perspective of VR history. The most notable shifts in policy occurred in 1943, when the definition of "handicapped" was changed to include the mentally disabled; in 1954, when research and demonstration projects began to be utilized; in the 1960's when great expansion occurred, facilities started to become a more important part of rehabilitation and the spillover of President Johnson's Great Society was apparent (migrant workers, corrections, Social Security recipients); and finally in the 1970's when the severely disabled became a priority, civil rights of the handicapped surged and the concept of "independent living" began as a project and then as a program.

Legislative History Comment 1: Diversification

If there is one word that would characterize the legislative history of VR it's diversification.

- The eligible populations became increasingly diversified starting with the orthopedically disabled, expanding to just about all forms of medical pathology, including mental retardation, psychiatric disturbance, and (during the Lyndon Johnson presidency) even

"behavioral disabilities." The 1973 Rehabilitation Act can be interpreted as a retrenchment from Johnson era expansionism with the elimination of the behavioral disabilities from the VR-eligible. Even with this contraction, over its 60 years the expansion in the VR-eligible population has been prodigious. There follows a list of medical conditions included in VR eligibility.

Visual Impairments

Blindness, one and/or both eyes, no or some light perception, due to:

Cataracts
Glaucoma
General infectious, and other diseases
Congenital malformations
Accident, poisoning, or injury
Ill-defined and unspecified causes

Hearing Impairments

Deafness, due to:

Degenerative and other noninfectious and specified diseases of ear
Upper respiratory infections and other infectious diseases
Congenital malformations
Accident, poisoning, or injury
Ill-defined and unspecified causes

Orthopedic Deformity or Functional Impairment, Except Amputations

Impairment involving upper and/or lower limbs or entire body due to:

Cerebral palsy
Congenital malformation or other and ill-defined birth injury
Other diseases, infectious and noninfectious
Arthritis and rheumatism
Intracranial hemorrhage, embolism, and thrombosis (stroke)
Poliomyelitis
Muscular dystrophy
Multiple sclerosis

Parkinson's disease
Spinal cord accidents and injuries
Accidents, injuries, and poisonings

Absence or Amputation of Major and Minor Members

Loss of at least one extremity, due to:

Malignant neoplasms
Congenital malformation
Diseases, infectious and noninfectious, and infections
Accidents, injuries, and poisonings

Mental, Psychoneurotic, and Personality Disorders

Psychotic disorders
Psychoneurotic disorders
Alcoholism
Drug addiction
Other character, personality, and behavior disorders
Mental retardation, mild
Mental retardation, moderate
Mental retardation, severe

Other Disabling Conditions for Which Etiology Is Not Known or Not Appropriate

Other conditions resulting from neoplasms (not elsewhere classifiable):

Colostomies resulting from malignant neoplasms
Laryngectomies resulting from malignant neoplasms
Leukemia and aleukemia
Other malignant neoplasms
Benign and unspecified neoplasms

Allergic, endocrine system, metabolic, and nutritional diseases:

Hay fever and asthma
Other allergies
Diabetes mellitus
Other endocrine system disorders
Avitaminoses and other metabolic diseases

Diseases of blood and blood-forming organs:

Hemophilia
Anemia and other diseases of blood and blood-forming organs (except leukemia and aleukemia)

Other specified disorders of nervous system:

Epilepsy
Other disorders of nervous system, not elsewhere classifiable

Cardiac and circulatory conditions:

Congenital heart disease
Rheumatic fever and chronic rheumatic heart disease
Arteriosclerotic and degenerative heart disease
Other diseases or conditions of heart
Hypertensive heart disease
Other hypertensive disease
Varicose veins and hemorrhoids
Other conditions of circulatory system

Respiratory diseases:

Tuberculosis of respiratory system
Emphysema
Pneumoconiosis and asbestosis
Bronchiectasis
Chronic bronchitis and sinusitis
Other diseases of respiratory system

Disorders of digestive system:

Conditions of teeth and supporting structures
Ulcer of stomach and deodenum
Chronic enteritis and ulcerative colitis
Hernia
Colostomies
Other conditions of digestive system

Conditions of genito-urinary system

Speech impairments:

Cleft palate and harelip with speech imperfections
Stammering and stuttering
Laryngectomies (from other than malignant neoplasms)
Aphasia resulting from intracranial hemorrhage, embolism or thrombosis (stroke)
Other speech impairments (except aphasia resulting from stroke)

Disabling diseases and conditions, not elsewhere classifiable:

Diseases and conditions of skin and cellular tissue, not elsewhere classifiable
Other disabling diseases and conditions, not elsewhere classifiable

- The range of services has likewise become increasingly diversified. From the original services of training, counseling, provision of prostheses and job placement, the list has expanded to include any goods or services for a client or even a client's family members where the provision of such gives promise of improving the client's employability. In this regard VR may represent a uniquely flexible government program in that the logic and justification for providing goods and services is their relationship to an individually determined rehabilitation goal and not whether they are on a legislatively circumscribed list of allowables.

- Inevitably as a result of the above, the VR process has itself become more diversified and complex. The diagram on the following page (Figure 1) depicts the progression of clients in the current VR program starting with referral (Status 00) and applicant (02) through eligibility evaluation (06) and the resultant declaration of eligibility (10) or ineligibility (08) on to the preparation of an individualized written rehabilitation program of services (IWRP - Status 12). This is followed by the provision of the planned services (Status 14, 16 & 18), placement in employment (Status 22) which, if continuing for 60 or more days, leads to termination from VR as a successful rehabilitant (Status 26) with the door still open for the provision of post employment services (Status 32) if required.

- Client goals under rehabilitation have also become more diversified. At its inception the overriding emphasis was on competitive remunerative employment. This has been expanded to include homemaker, sheltered employment, and unpaid family worker. In addition, an individual can be served even if that individual is already employed but where, failing rehabilitative services, there is a risk of loss of employment due to disability. So, besides entering the labor market, retention in that labor

force has also become an acceptable rehabilitation goal. In this regard, the title of the VR Act was changed in 1973 from Vocational Rehabilitation to simply Rehabilitation Amendments. The vocational was dropped. This name change reflected the introduction of the independent living provisions which (although they didn't survive the 1972 Nixon-veto/Congress battle) were reintroduced and retained as a separate title with the passage of the 1976 Rehabilitation Amendments. This entitles disabled individuals to rehabilitative services even when the severity of the disability is such that a vocational objective is not feasible but where an improvement in mobility, self-care, or activities of daily living can be expected to result.

To recapitulate, a successful vocational rehabilitation closure may represent:

1. The movement of an individual from unemployment to competitive employment.
2. The retention of an individual in employment.
3. The movement of an individual into noncompetitive employment.

In addition, if the independent living title gets funded, an additional closure category for that title may be added.

Legislative History Comment 2: Coping With Diversification

From its inception in 1920 to the present, the community-based, general caseload-carrying rehabilitation counselor (first called the rehabilitation agent) has occupied the central role in the provision of rehabilitative services in the civilian state-Federal program. The increasing pluralism in client population, range of services, VR process, client goals has prompted attempts to adjust this role. Instead of general caseload, various specialization efforts have been attempted:

- counselor specialization by disabling condition, e.g., deafness, blindness, mental illness, spinal cord injury,

- counselor specialization by phase in the VR process, e.g., intake/diagnostic specialists for early stages in the process versus placement specialists for later phases,

- counselor specialization by referral source, e.g., school counselors to deal with referrals from that source, "trust fund" counselors to deal with referrals from the Social Security Disability Income program, and

- counselor specialization by rehabilitation goal. Although still in its embryonic form, independent living is beginning to find its expression in design of special projects with independent living speciality counselors.

Despite these and similar attempts to cope with increasing diversification, in the main, the conduct of the civilian rehabilitation program in this country still falls primarily on the general caseload rehabilitation counselor with the expectation that he/she deal with all 100+ disabling conditions, across the range of the entire rehabilitation process (referral to placement) with varied rehabilitation goals.

VR History and Demand for an OIS

The reason for presenting an outline of VR's legislative history is to give some inkling as to why, as things currently stand, the demand for OIS in VR might be less than what one might expect. In the case of job retention (assuming the client's present job is satisfactory) occupational or career guidance information is superfluous. The same is true where the vocational goal is sheltered employment or homemaker, unpaid family worker, vending stand employment, etc.

In addition to its own legislative history, VR's performance vis-a-vis vocational areas, including occupational information, has been influenced

by other developments, including the creation of state Employment Security systems in 1933 pursuant to the Wagner-Peyser Act. Previously VR was more involved in the job placement process, but with the creation of State Employment Agencies, placement was assigned to SEA's. In the name of avoiding government duplication, VR, at least in some states, got their wrists slapped for continuing to be involved in placement. Thus vocational preparation was to be left with VR, but vocational placement was to be the job of ES. However cogent the arguments are for such a division, its Achilles heel is the extent to which decisions in the early steps of the VR process (selection of job goal, planning vocational services) are guided by valid, relevant occupational information. If it is not, then when someone is turned over for placement, it may be discovered that the person has been prepared for a job that doesn't exist, or one that may exist elsewhere (it is not in the local economy and the individual is not willing to relocate). Or, perhaps, that the job one has been trained for provides a low level of earnings, and the individual would be better off economically to reject the job in favor of continuation on welfare or disability income. Further, any one of a host of other situations may emerge at the placement end of the rehabilitation process which, had it been anticipated earlier, could have been avoided. Put differently, while the tasks of vocational preparation and vocational placement from the division of labor standpoint can be separated, in fact, the functions are two sides of the same employment coin, each needing to be closely coordinated with the other.

Similar Achilles' heel problems endure even within the same agency as when VR develops placement specialists who take over after services have been provided and when the client is considered job ready. Here, too, unless the earlier process of vocational preparation is informed with realistic occupational information, and unless there is mechanism for feedback from the point of placement (whether they be ES or VR) back through to the earlier steps in the vocational preparation, then the interests of efficiency and effectiveness may be compromised and, indeed, also the continuity of the rehabilitation process. Consistent with general management principles, as specialization increases, so does the need to integrate and coordinate the specialized functions or elements to achieve common organizational goals.

Other Historical Perspectives

1. Role of the Rehabilitation Counselor

Dual themes characterize the development of the rehabilitation counselor's role: legal and casework.

a. Legal role - Here the counselor is expected to be the executor of public policy. For example, the counselor must certify eligibility for services which includes determining:

- that a medical condition exists (see list on pages 4 - 6).
- that this condition constitutes a barrier to employment; and
- that there is a reasonable expectation that the provision of rehabilitation services will enhance employability. In addition to eligibility, the counselor is expected to see to it that all pertinent Federal and state statutes, regulations and policies are complied with, e.g., a case may not be closed as "successfully rehabilitated" unless there is continuous employment for 60 days or more.

2. Casework Role: At least three components of the casework role are discernible:

a. Counselor as arranger (organizer/coordinator) or services provided by other vendors, e.g., occupational therapy, physical therapy, speech pathology and audiology, prosthetic/orthotic devices, medical/surgical treatment, vocational evaluation and work adjustment, vocational training, psychological/psychiatric evaluation and treatment. The concept of the counselor as orchestrator of the services provided by others is likely to be increasingly emphasized as the size of the counselor's caseload increases and so the possibility of providing much in the way of individualized attention correspondingly decreases.

b. The therapeutic counselor assists clients in dealing with emotional distress including psychological adjustment to disability. This may involve assisting the client who is exaggerating or (at the other extreme) denying the implications of his/her disabilities to come to a more realistic appraisal of his/her situation. In this therapeutic role, the counselor may also deal with family members to assist them in coping effectively with the disabled family member, thus avoiding extremes of overprotection or rejection.

c. The vocational counselor functions more or less in the traditional vocational/career guidance mode, including assisting the individual to: (1) clarify and understand the relationship between personal skills, interests, aptitudes, etc., and the range of occupational alternatives available to him/her; (2) identify achievable vocational goals and preferred paths to those goals; and (3) assist in the review of occupational information to determine what jobs and/or careers would be most suitable, etc.

Footnotes

[1]The author gratefully acknowledges the contribution of Mr. Antonio Jones of the West Virginia Research and Training Center to this section.

[2]For specific testimony, see U.S. Congress, Senate Committee on Education and Labor, Vocational Rehabilitation of Persons Disabled In Industry: Hearings on S.18, 66th Congress, First Session, 1919; and U.S. Congress, Committee on Education and Labor, Vocational Rehabilitation of Persons Disabled in Industry Joint Hearings on S.4922, 65th Congress, Second Session, 1919.

[3]At that time (1920), the "welfare state" had not been devised; it was a questionable role of the Federal government to intervene in the lives of individuals; that was a state role. Also, any lot an individual found himself in was considered to be his own fault.

[4]See Congressional Record, Sept., 1920.

[5]Public Law 66-236.

[6]For a discussion of the history of the rehabilitation professional development see C. Esco Oberman, A History of Vocational Rehabiiitation in America, Denison and Co.: Minneapolis, 1968.

[7]P.L. 74-271

[8]P.L. 78-113

[9]P.L. 89-333

[10]P.L. 93-112

[11]P.L. 93-516

[12]Rehabilitation Comprehensive Services and Developmental Disabilities Amendments of 1978, Public Law 95-602.

[13]For a more elaborate breakdown, see Antonio Jones, Section Analysis of the Rehabilitation, Comprehensive Services and Developmental Disabilities Amendments of 1978, West Virginia R & T Center, Dunbar, W.V. (1978).

Chapter 2

OIS AND TECHNOLOGY

In NOICC's A Framework for Developing an Occupational System, job duty information is noted as being "very important to handicapped persons for assessing whether they are capable of performing required physical and mental activities" (p. 39). On the next page, while discussing ability and aptitude, the need is noted for "information on the physical, mental and psychological attributes essential for performing occupational tasks." While not disputing the validity of these statements, I think it is a unidirectional approach to what is a bidirectional issue. These quotes are premised on the assumption that the job is the given, the fixed point, and what has to be determined is how do I fit the job (unidirectional). (This is reminiscent of the days of the man/machine studies which, on closer scrutiny, were little more than attempts to figure out how to get the man to fit the machine. Not vice versa.)

What I am suggesting is that, if Peter Drucker's thesis is accepted, the quickening pace of technological change makes it increasingly important that we be sensitive to a bidirectional approach in which we also ask: How can the job, the tasks, the machines, be made to fit the person?

This has obvious relevance to job restructuring for persons with handicaps. But the case can be that the intrinsic utility (beyond just the application to handicapped persons) of an OIS would be enhanced if such reciprocal, bidirectional thinking were incorporated into an OIS. What I'm suggesting is that OIS be technology-sensitive.

As an example, in the past persons who were blind were not considered candidates for jobs that required reading. A device has been developed which translates printed matter into tactile patterns that the blind person can "read." More recently, a device has been perfected that converts print into words enabling the blind person to "hear" the printed word. Similar devices such as talking calculators, can considerably expand the range of jobs that a blind person might be considered capable of performing. The person is still blind, but the technology can fit the job to the person.

In the "best situation" an OIS, when displaying information about work demands, ability and aptitude, would simultaneously display up-to-date listings of devices, technologies, adaptations, etc., that could accommodate a job to personal limitations, be they sensory, physical, or psychological. The "next best situation" would be to have a companion system to an OIS containing accommodation information cross-referenced to jobs or indexed to a taxonomy of job duties and demands. At the very least, OIS developers should be sensitive to the need for "bidirectional thinking" in which jobs can be fitted to the person as well as the reverse.

While appreciating the positive intent behind efforts to develop listings of jobs that are "good for the handicapped" there is a risk that such an approach stereotypes individuals into occupations, e.g., the blind piano tuner or the deaf printer. Plus, there is as much variability within individuals with a particular disability as there is between members of that disability group and the "normal." Some persons who are blind are also quite intelligent. Others are less so. Some paraplegics have excellent mechanical aptitude. Others don't. To key on disability as a criterion for matching to a job may be to adopt a trivial criterion. Aristotle noted that one of the weakest ways to define something is in terms of what it is not. To define an individual in terms of that he/she is not, or can't do, then proceed to use this as the basis for (rather than a consideration in) occupational choice and/or career decisionmaking is a weak way to match a person to a job or career.

As an example of accommodation information, the next four pages (Exhibit 1) present excerpts from a publication of the Institute for Information Studies titled "Rehabilitation Engineering Sourcebook."

If information such as the preceding would be readily available, it would:

- assist disabled individuals to enter the work force
- assist disabled individuals to reenter the work force when acquisition of a disability (e.g., Workers Compensation cases) has forced a temporary departure

WORK

W-01
Multiple Sclerosis
Tremors
Accounting

PROBLEM: Tremors preclude use of standard automatic dialer
C P A needed a way to operate an automatic dialing device, pre set to dial separately each of his seventeen customers. He has continuous severe tremors so he can not use the closely placed normal buttons on an automatic dialer.

Dexterity Aid

SOLUTION: Rewired automatic dialer
An automatic dialer was rewired to extend each of seventeen button connections to separate push buttons, widely spaced on a long board located on the edge of the desk. FFI No. 15

W-02
Blindness
Administration

PROBLEM: Need to review tape recorded materials quickly
A totally blind project coordinator for an association of art museums needs to review extensive taped materials in lieu of reading written reports. The additional time required to listen to spoken materials, compared with reading time, reduces the efficiency of her time usage, however.

Sensory Aid

SOLUTION: Speech compressor
Several speech compressors, which permit playback of recorded materials at speeds faster than the original recording without altering the pitch of the voice, are available commercially. For example, combined recorder/compressors are available from Variable Speech Control Co. 185 Berry St., San Francisco, CA 94107, (415)495-6100, and Visualtek, 1610 26th St. Santa Monica, CA 90404, (213)829-3453, for around $300. A compressor unit which may be used with other variable speed playback units is available from American Printing House for the Blind, 1839 Frankfort Ave, Louisville, KY 40206, (502) 895-2405, for approximately $85. FFI No. 2 and No. 3

W-03
Hand Absence
Assembly

PROBLEM: U.E. amputee unable to do two-handed job
In a sheltered workshop a client with one hand was not able to perform a job which required the assembly of valve handles by inserting a threaded bolt into a drilled and tapped sleeve.

Jig/Fixture

SOLUTION: Holding fixture
A fixture was built to hold the post head by means of a slot milled into the base of the fixture. This prevented the bolt from twisting when the sleeve was screwed on. The completed assembly was dropped down a chute to a tote box. FFI No. 6

W-04
Any Etiology
Hand/Finger Dexterity, Poor
Assembly

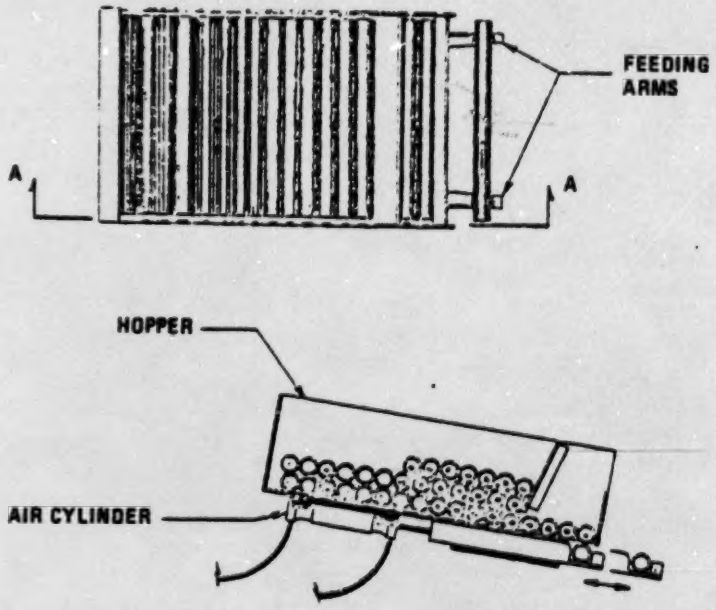
PROBLEM: Lack of dexterity to search, select, grasp objects
Ten inch lengths of steel tubing (.75 or .875 inch diameter) are received by Center Industries Corp. in Wichita, KS in bulk quantities for a manufacturing/assembly job. They are placed in large hoppers containing several hundred tubes. Several disabled workers lacked the dexterity to search, select, and grasp one tube from the hopper.

Exhibit 1. Excerpt from "Rehabilitation Engineering Sourcebook"

Jig/Fixture

SOLUTION: Cylindrical parts selector feeder

A tube feeding device was designed that would select one tube at a time from the hopper and place it within easy reach of the operator. The tubes are stacked orderly in the hopper so they roll to the selecting slot. The tube is fed to the operator by two feeding arms, which are parallel and suspend each tube between them in presized notches. They are powered in and out (select and place) of the hopper by a small air cylinder. The feeding action may be activated by the operator or some other related operation. FFI No. 1



CYLINDRICAL PARTS SELECTOR FEEDER

Exhibit 1. Excerpt from "Rehabilitation Engineering Sourcebook" (con.)

W-05
Hand/Finger Dexterity
Poor
Assembly

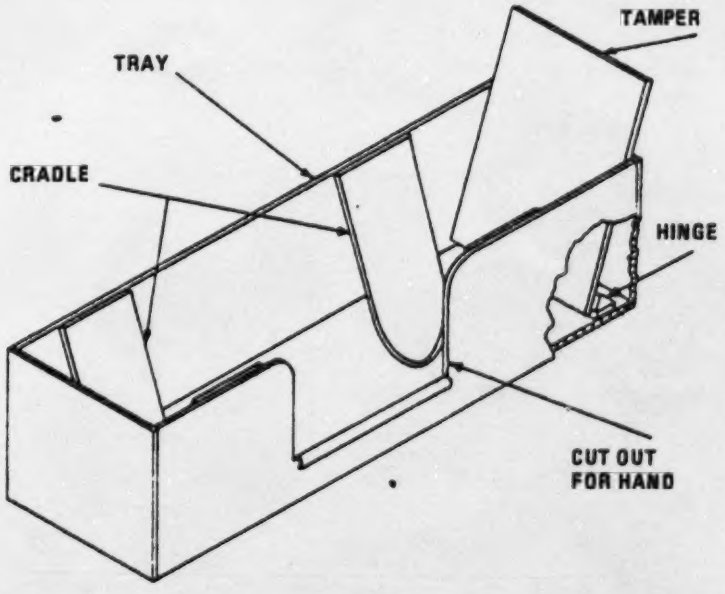
PROBLEM: Impaired grasp and dexterity

A manufacturing operation at Center Industries in Wichita KS entails removing 18 inch wires from a rectangular tray and bundling them in bundles of 100 units. A worker with poor dexterity in his hands and fingers had difficulty removing them from the tray and was unable to bundle them with a tape wrap.

Jig/Fixture

SOLUTION: Wire bundle tray

A holding tray was designed and fabricated that would accumulate the wires into a bundle that could be easily grasped for taping. It incorporates a radiused holding cradle and is cut out on one side to accept the operator's hand as he grasps the bundle of wires. The tray is approximately one and one half inches longer than the formed wires to allow placement of a plate which is hinged at the bottom in one end of the tray to act as an alignment tamper. The tamper is mounted in the tray at a slope which provides for a funnel effect to ease placement of the wires in the holding tray. (See illustration.) FFI No. 1



HOLDING TRAY

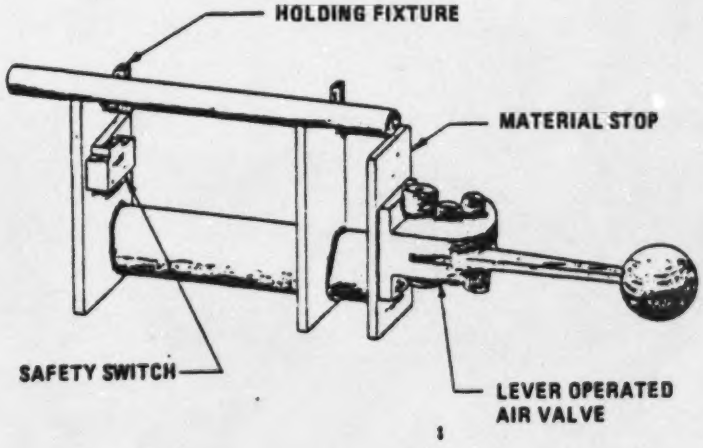
Exhibit 1. Excerpt from "Rehabilitation Engineering Sourcebook" (con.)

W-06
Paralysis, Judgement Impaired
Beading Machine Operation

PROBLEM: Inability to stand, poor manual dexterity
The beading machine used in a manufacturing process is operated from a standing position and requires the operator to operate two levers, hold a length of steel tubing in place, and gauge the length of cycle time during each beading operation. The employee selected used a wheelchair, did not have the dexterity to operate the levers and hold the tubing, and lacked the judgement necessary to gauge the cycle length consistently.

Jig/Fixture

SOLUTION: Modified tube beading machine
A new machine stand was built to lower the beading machine. The levers were fitted with air cylinders to incorporate pneumatically powered actuation. An electronic timer was built that controlled the length of time the beading head was engaged. A holding fixture was fabricated which eliminated any operator error in aligning the tube with the beading head. This included a material stop for locating the tube, and a safety switch which prevented machine operation until the tube was properly nestled in the cradle. A lever operated air valve was installed to acutate the sequence of operations.
FFI No. 1



MODIFIED TUBE BEADING MACHINE

Exhibit 1. Excerpt from "Rehabilitation Engineering Sourcebook" (con.)

- assist older individuals still in the work force to adapt to those impairments associated with the aging process. This is of particular relevance in view of the change in mandatory retirement age to 70.
- help clarify and distinguish those job elements that are essential from those that are technologically modifiable.

Disablement and specialized technology aside, the impact of technology generally on an occupation is often such that radical changes may occur in the nature of the occupation even though its title may not change. Using a typist as an example, in the days of the mechanical typewriter, typing required considerable finger exertion and dexterity. The electrification of the typewriter meant that at least some of those persons who were previously unemployable (e.g., arthritis of the hands) may no longer be unemployable. More recently, the advent of word processing hardware is changing the nature of "typist" even more radically. Previously the typist "drove" the typewriter, directly putting characters on a piece of paper. With word processing the typist stores, removes, corrects characters on some form of tape or disc and it is the machine which directly puts characters onto paper. At this playout step, the typist doesn't even have to be present.

To repeat, the point here is that those aspects of an OIS that deal with duties, job demands, abilities and aptitudes need to be technologically sensitive, otherwise the validity of the OIS may be compromised for the nonhandicapped as well as for the handicapped. This underscores what frequently occurs when applications to disability are contemplated. The specific application often does not create new issues or problems, rather it focuses and helps to more clearly define already existing issues or needs. As a case in point, affirmative action for the handicapped requires that employers make reasonable workplace accommodations so that an otherwise qualified handicapped person can become employed. It might appear that the making of reasonable accommodation was created by this legislation. On closer scrutiny, however, it can be argued that this simply focused an already existing issue. Namely, if work situations are not reasonably accommodating to the needs of workforce participants--disabled

or not--then the interests of productivity and profitability may needlessly be compromised.

Harsh, unyielding environments, ones that are "unreasonably unaccommodating" to worker needs, preferences, and limitations are likely to be less productive environments, even if a disabled worker were not present. To be sure, accommodating to the needs of a handicapped worker might involve an order of magnitude greater than that for a nonhandicapped, but the difference is one of degree rather than of kind.

In addition to technologically-based job accommodations, there are those that can be achieved by altering the way work is structured, distributed, or, more generally, managed. Examples of these reasonable accommodations include:

- flextime: allowing workers to determine which portions of the day they prefer to work;
- job sharing: two individuals, neither of whom want or can work full-time, together share the same job, e.g., one works odd, the other even days;
- task redistribution: reassigning tasks among several job incumbents to capitalize on the skills and interests, but minimize the limitations of each;
- job reengineering: refashioning the job requirements, work environments, job duties and demands to make a job compatible with an individual's abilities and limitations;
- destereotyping of jobs: evidenced especially in the array of jobs formerly thought to be "men's jobs" now being filled by women. This is a mental or "head accommodation."
- desensitization of work place: a related "head accommodation" has to do with reevaluating whether employee "aberrations" assumed to disqualify are in fact intrinsic to the job or more the response of the work place to the aberrant. For example, psychotic individuals who actively hallucinate may continue to function adequately in certain jobs (if hallucinations are the only manifestation), after coworkers

have been informed about how to respond to the hallucinations. Similarly, individuals who are seizure-prone might not have to be barred or removed from a job after coworkers are desensitized to the sight of a person going through a seizure and learn the appropriate ways of responding to the situation, etc.

- telecommuting: With the advent of computers and increasing availability of telecommunications technology, futurists forecast that the traditional notions of the worksite might be revamped. More and more, it is possible for workers to remain at home and telecommute to work. The prospect of a much revamped view of cottage industries thus becomes possible. This has obvious implications for the homebound, those whose disability is such that they cannot leave home, but who still could work at jobs in the home.

Recapitulation

Up to this point in this chapter the following issues have been advanced:

1. Occupational information dealing with the work setting, aptitude, and related issues needs to become bidirectional, concerned with how jobs can be accommodated to individuals and not just the other way around.
2. In the "best situation," accommodation information would be an integral part of the occupational information system itself. Here a computerized data bank cross-referenced to job titles can be envisioned with continual updates as new information and technologies become available.
3. In addition, "exemplary practices" could also be centrally stored depicting how jobs may be accommodated to handicapped persons through restructuring, job sharing, use of flextime, and other management techniques.

4. The benefit from the above would accrue not just to handicapped persons, but to generalized improvement in the understanding of the relationship between worker and job and the impact of accommodation on both.

Potential Audiences

If information of the above-described kind were either a part of or easily cross-referenced to an OIS, it would have significant value to:

- disabled persons themselves, at the point of job training or career selection as well as at the point of job placement.
- counselors and others working with disabled persons in the areas of vocational guidance, career exploration, job placement and the like.
- employers seeking to comply with affirmative action provisions of Federal contract compliance dealing with reasonable accommodations, and to assist disabled employees to reenter the work force.
- job analysts and others responsible for assessing the requirements for different occupations.

Suggestions for Implementation

It is recognized that the integration of job accommodation/reengineering components into an OIS represents a significant, if not major additional component. While not seeking to minimize the magnitude of such an undertaking, recent policy developments at the national level have rendered such an undertaking more feasible. In this regard, reference is made to the Rehabilitation Act of 1973, particularly to Title II. This title created a new National Institute of Handicapped Research (NIHR). In the Declaration of Purpose for this Title, Congress included the following:

> ...facilitate the distribution of information concerning developments in rehabilitation procedures, methods, and devices to rehabilitation professionals and to handicapped individuals, to assist such individuals to live more independently; improve distribution of technological devices and equipment for handicapped individuals by providing financial support for the development and distribution of such devices and equipment...

More particularly, the legislation mandates the NIHR Director to produce:

> ...in conjunction with the Department of Labor, the National Center for Health Statistics, the Bureau of the Census, the Social Security Administration, and other federal departments and agencies, as may be appropriate statistical reports and studies on the employment, health, income, and other demographic characteristics of handicapped individuals and disseminating such reports and studies to rehabilitation professionals and others to assist in the planning and evaluation of vocational and other rehabilitation services for the handicapped.

Another significant component of this legislation was the creation of the Interagency Committee on Handicapped Research comprised of such members as the President may designate including the following (or their designees): NIHR Director, the Commissioner of Education, the Administrator of Veterans' Affairs, the Director of the National Institute of Health, the Administrator of the National Aeronautics and Space Administration, the Secretary of Transportation, and the Director of the National Science Foundation. The purpose of the Committee is to "identify, assess, and seek to coordinate all Federal programs, activities, and projects, and plans for such programs, activities, and projects with respect to the conduct of research related to rehabilitation of handicapped individuals."

Although not so designated by statute, the participation of NOICC in the activities of the Interagency Committee (at least by way of liaison) from the standpoint of the adaptation and development of an occupational information system suited to disabled persons would seem to represent a viable alternative. In addition to these administrative and statutory opportunities, rehabilitation legislation has for almost two decades supported a network of rehabilitation engineering research centers whose charge it is to produce new scientific knowledge, equipment, and devices and to see to it that they are used. In addition, the Veterans Administration has developed a prosthetics research program of international significance as well as maintaining an information system that updates users concerning new developments in the area of prosthetic devices.

Other initiatives worthy of mention include projected plans between the Control Data Corporation and the Institute for Information Studies which seeks to develop a data base of technological aides and devices for use by disabled and other interested individuals. It is also worthwhile to mention

the publication of the "Green Pages Directory of Products and Services for the Physically Disabled." This regularly published guide updates readers as to new devices, especially commercially available ones that are of interest to the physically disabled.

Conceptual Distinctions

To conclude this section, it is well to examine briefly some of the key concepts often used (and sometimes confused) in discussions of disability. This way a clearer perspective can be developed, not only about OIS and technology, but how the utility of occupational information systems in general can be enhanced from the standpoint of employability of handicapped persons.

Key Concepts

Pathology represents the onset of some medically identifiable deviation from normal functioning. This deviation can result from infections, traumatic occurrences, metabolic and other imbalances, degenerative diseases, or other etiology. Pathology can refer either to the deviation itself or to the organism's attempt to cope with the deviation and restore normality.

Impairment indicates a physiological, anatomical, mental loss and/or abnormality that results from and may continue after active pathology subsides. For example, paralysis (impairment) resulting from polio endures after the active pathology subsides. Impairments can also result from the side effects of treating pathology, e.g., amputation of the limb of a person with (the pathology of) gangrene to save the person's life. The conditions listed on pages 4 - 6 are primarily impairments.

Functional limitations refer to restrictions in physical or mental performance that result from impairment. The correspondence between impairment and functional limitation is less than perfect. For example many tissues can undergo substantial alteration in structure and function without detectable loss in ability of (for instance) a limb to perform. Also blood vessel walls might have to undergo substantial changes before performance-hampering changes in blood flow would occur. Also identical functional limitations may result from different impairments. Example: three individuals might

have the same functional limitation--unable to lift a heavy weight--but for "A" this limitation might result from orthopedic impairments in the lower back; for "B" reduced cardiac output might be the culprit; while for "C" the impairment might be lung trouble.

Work disability is a subset of disability referring to an individual's lack of fitness to work at a particular job or to work in general.

Most theorists view disability[1] as referring to role or task performance and so argue that its manifestation is at the social level. In contrast, pathology, impairment, and functional limitations are manifested at the organismic level. As a summary example:

Pathology - Polio
Impairment - Paralysis of Lower Extremity
Functional Limitation - Unable to walk
Disability - Can't work at jobs requiring use of lower limbs (work disability or employability)

Functional Limitation

From the standpoint of employability, the key elements are functional limitations more so than impairments or pathology.

1. Identical impairments may have widely varying consequences.
   Example 1: Blindness admits of a wide variety of functional limitation, e.g., blindness covers everything from being totally blind through to being able to read with the aid of magnification.
   Example 2: Two individuals may both have the impairment of quadraplegia with one having considerable residual upper extremity functioning and the other not.
2. The impact of impairment on employability is as much the result of other functional characteristics of an individual (e.g.,

[1]To further confuse matters, the term handicap is sometimes used in rehabilitation circles to mean what Social Security and others refer to as disability.

educational level, literacy level, prior work history) as it is of the impairment-induced limitations.

Example 1: Everything else being equal, a paraplegic who is of superior intelligence is likely to be more employable than one who has marginal intelligence.

Proposed Schema

Thus what we are proposing as a basis for OIS consideration vis-à-vis persons with handicaps is a view of employability that regards employability as an interaction of the functional characteristics of an individual in combination with environmental accommodations. Schematically, this can be represented in the following fashion:

$$E = FL \times En$$

WHERE: E = Employability
FL = Functional Limitations
En = Environmental Adaptations

Such a schematic representation calls attention to a number of important points.

First, as far as the individual is concerned, it is not so much the pathology or the impairment of the individual, but rather the functional limitations accruing therefrom that are more employability-relevant. Second, the schema depicts functional limitations as potentially compensatable by changes in the environment, technological or managerial. Third, by postulating a multiplicative rather than ad additive relationship between functional limitation and environment, we are proposing an interactive, rather than a simply additive model for understanding the relationship between these two phenomena on the one hand and employability on the other.

Chapter 3

VOCATIONAL REHABILITATION: A GENERAL DESCRIPTION

In the first section the legislative history of VR was discussed including a description of the current VR process; the progressive diversification over its history of VR target population, services, and goals; the attempt to deal with this diversification through varying forms of counselor specialization; the plurality of the roles the VR counselor is called on to perform.

In this section we will attempt to relate that background material to the specific decisionmaking processes that go on in VR with particular reference to how occupational information can assist in these processes. We will start with the service delivery level.

Function 1: Service Delivery

The centerpiece of VR agency functioning is the counselor-client relationship. At initial contact, the counselor must determine whether the client is VR eligible. This means that an applicant has a medically supportable physical, mental, or emotional impairment (first criterion), which for that individual constitutes a barrier to employment (second criterion); and it is reasonable to expect that the provision of rehabilitation services will improve employability (third criterion). For eligibility, all three criteria must be met.

Once eligibility has been determined, the processes of IWRP development begins (see flow diagram p. 30). A distinguishing characteristic of VR as a clinical process is its individualized (note the I in Individualized Written Rehabilitation Program) character. This is in contrast to manpower types of training programs where one thinks in terms of aggregate demand and supply for labor, development of possibly large scale efforts targeted on increasing labor supply in given occupational categories and the like. Manpower training programs can be macro in quality while VR training are (or should be) much more micro in character with services (including vocational training) tailored to the idiosyncratic needs, skills, and limitations of the individual disabled person.

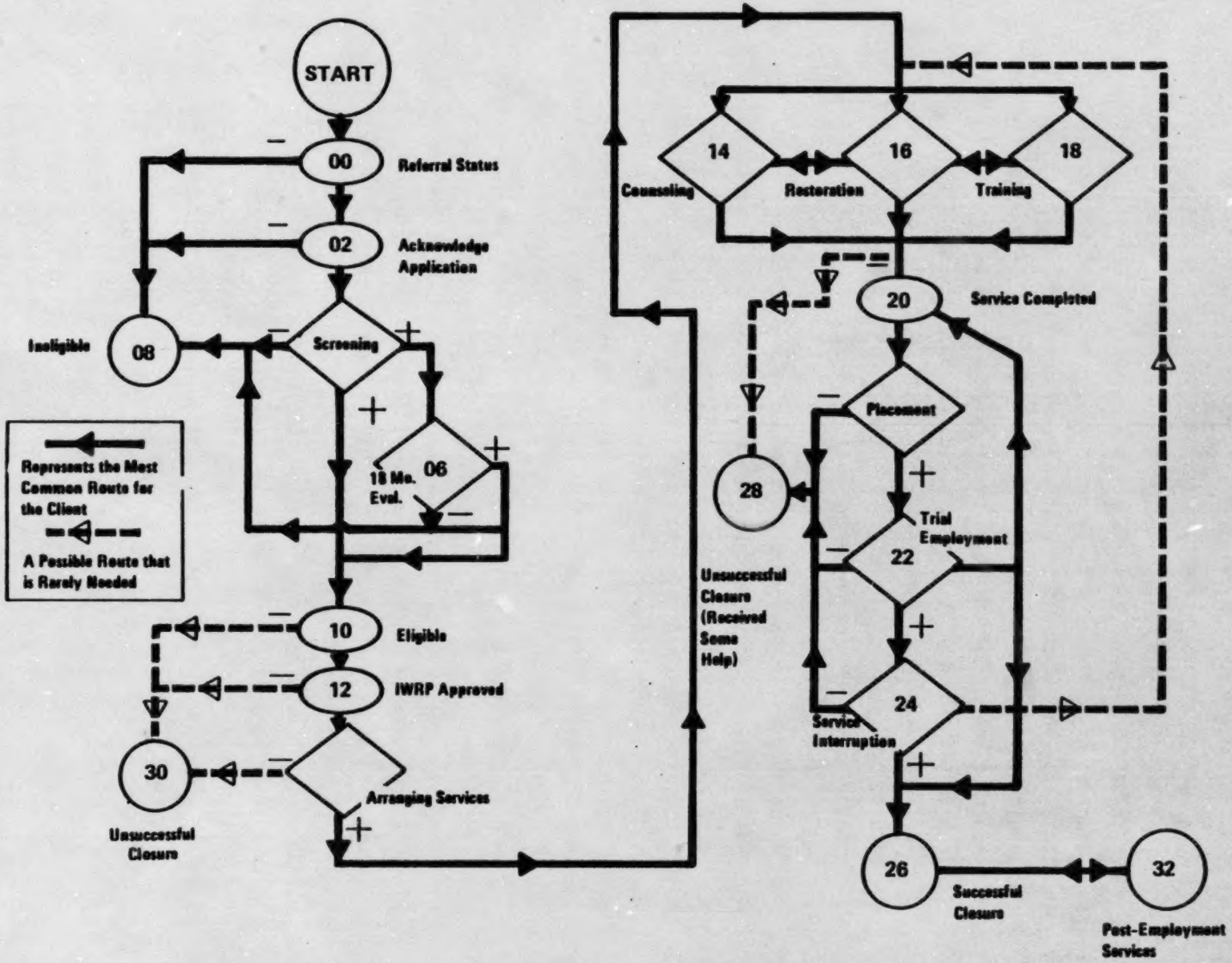


Figure 1. Flow diagram of clients in VR program.

Despite these subtle differences at the service delivery level, VR likes traditional manpower programs and has significant need for timely, valid, occupational information. The VR counselor has need for this information, at least at key points in the VR process including:

- identification of vocational/career interest,
- selection of a vocational goal,
- revision of IWRP, and
- placement.

Selection of Vocational Goal. In its initial development, the IWRP must specify (usually by DOT code) what the job objective is going to be. This is the result of cooperative exploration and negotiation between client and VR counselor after thorough diagnostic evaluation. At that portion of the VR process leading up to goal selection, it is difficult to think of a more useful tool to client/counselor than a good occupational information system.

At this phase, an OIS would be used in a vocational information/ career guidance fashion to deal with such questions as:

- As a disabled person, what vocational alternatives are available to me?
- How do my functional limitations and strengths, my abilities and aptitudes match up with these vocational options?
- If I select option X, what are the likely consequences in terms of probable earnings and benefits in contrast to Option Y?
- If I opt for X, will I have to relocate in order to increase my chances of employment and/or higher earnings?
- What are the career ladder possibilities for X versus Y?
- What are the patterns for acquiring the necessary skills to be competitive in job X versus Y?
- What technological aids are available to help me overcome my functional limitations?

In addition, further OIS information would have specific relevance to the counselor in his/her role as allocator of resources.

- What are the present and projected demands on VR case service dollars from selecting option X versus Y?
- What non-VR financial assistance might my client be eligible for?

Finally, OIS information would have direct relevance to the counseling relationships itself. For example, many clients, when they come to VR, are already the recipients of a complex package of cash (e.g., Social Security, Workers Compensation, union benefits) and in-kind (e.g., food stamps, subsidized housing, medical care) benefits. In the majority of cases, the continuation of these benefits is contingent on the client staying out of work. In addition to the cash value of the benefits he/she receives, these benefits are risk free (since the government underwrites many of them) and inflation-proof (benefits such as food stamps are indexed to the cost of living). Thus, for many disabled persons referred to VR, an up front question is: Can I afford rehabilitation? Will the economic benefits I forfeit as a result of entering the work force exceed the benefits I will derive from remaining outside the labor force? Such a question is unanswerable without reasonably accurate projections as to likelihood of placement and probable earnings in a given occupation, stability of employment and/or likelihood of earnings improvement in that occupation, future demand in that occupation, and similar data that are contemplated in a comprehensive occupational information system.

With this information the counselor and the client, in the early stages of the rehabilitation process, can cooperatively determine whether rehabilitation is a path that is in the client's interest to pursue. Thereby the client can give informed consent, both to the generic idea of getting rehabilitated and to the specifics of IWRP goal selection, and the means to this goal.

The importance of dealing with what has come to be called economic disincentives in the early stages of the VR process (average time in VR process is about two years) is attested to be case histories in which clients become aware of benefits forfeiture at or after the point of placement. By this time in the VR process, considerable effort and case service dollar expenditure may have taken place only to have the client reject the alternative of working as not in his/her economic self-interest.

IWRP Revision. In the course of the rehabilitation process it may prove necessary to revise either the vocational rehabilitation objective and/or the means to this objective. The need for such revision may come from such sources as:

- changes in the medical status of the individual, particularly in cases where a still active underlying pathology is subject to remission or exacerbation.
- changes in labor market supply/demand characteristics, especially those that are more local in nature.
- technological changes that alter previously established job objectives and/or skill acquisition paths thereto.

Placement. At the service delivery level an additional key point for application of occupational information is at the placement end of the VR process. Here its use will be more from the standpoint of labor market information rather than career guidance.

- What is the current demand for specific occupations?
- What are the current job openings?
- Where are these jobs?
- What are the current career ladder possibilities in job X versus job Y?
- What implication does my disability have for these career ladders? Will it become more of a handicap as I progress in career ladder X versus Y?

These are but some of the vital questions arising at placement which can be answered only by valid current labor market information that is contemplated in a comprehensive occupational information system.

Function 2: Planning

Here planning is used in two senses:

- planning at the individual service delivery level
- planning at the program level

Service Delivery

A central responsibility of management is to create an environment that enables and facilitates performance at the operational level. As indicated earlier, one of the key operational tasks in VR is the development of an individualized plan of services. Therefore, an issue for management is: What can be done to enable or facilitate the planning of services? Seeing to it that operational staff have access to the information needed for service planning, it can be argued, is one of the responsibilities of management.

Within such a framework, a task for central state agency management is functioning as the link whereby relevant, timely, geographically appropriate occupational information is made available to counselors so that the tasks of IWRP development (selection of job objective, means to achieve this objective) can be made with the best available information.

Program Level

At the program level there is an evident need for planning vocational training and related services. Vocational rehabilitation agencies provide vocational training and related services in one of two fashions. Either the VR agency directly provides such services (e.g., through vocational training programs in state-operated rehabilitation facilities) or, more commonly, by arranging for these services through vocational, technical, and trade schools, institutions of higher learning, private rehabilitation facilities, and other sources. Nationally, about $300,000,000 are spent annually by rehabilitation agencies for vocational training and related services. Planning these services so that they impart skills and occupational competencies that are marketable is an issue of concern to VR management. In this regard VR management needs to plan:

- phasing out the use of vocational preparation programs that are obsolescent or that constitute an unfavorable demand/supply posture for the one trained, and

- phasing in of vocational preparation programs that represent "upcoming" job areas and/or ones that constitute favorable demand/supply opportunities for the one trained.

In this regard a sound OIS can provide a highly useful planning guide to state Chiefs of Casework Services, Rehabilitation Center Directors, and others who either are responsible for direct provision of such training services or its purchase from non-VR sources.

An OIS can constitute a nucleus around which cooperative planning can take place with:

- other manpower suppliers - vocational education, technical education, trade schools, other educational institutions, and
- consumers of manpower - employers, unions.
  Example: the Projects With Industry program of the Rehabilitation Services Administration in which industry and labor cooperatively plan with VR to develop or adopt skill training programs targeted on current or anticipated occupational demand.

Function 3: Evaluation

OIS can assist in two levels of evaluation: casework level and program level.

Casework Level. Current rehabilitation casework evaluation may include examining the degree of congruence between job goal established for the IWRP and the job in which the client was ultimately placed. Usually this is done by a comparison of the DOT codes for both IWRP job objective and the job placement. While congruence is one evaluative criterion, it is of secondary importance to other key questions such as:

- Was the original job objective compatible with the individual's strengths, weaknesses, abilities, etc. (Individual compatability)?

- Was the original job objective compatible with the labor market conditions known of projected (labor market compatability)?
- Is there congruence between job objective and ultimate placement?
- If there is lack of congruence between job objectives and job at placement, what is the reason behind it? Job discrimination? Inadequate vocational preparation? Other?

Evaluation of this type at the casework level can be considerably enhanced by management having access to an OIS of the kind envisioned in the NOICC publication, A Framework for Developing An Occupational Information System.

Program Level. Implicit in the earlier discussion of program planning is the notion of program evaluation. Two components can be distinguished here:

- assessment: in which a descriptive and relatively nonjudgmental attempt is made to portray program performance.
- evaluation proper: in which a judgment is made regarding the value of the performance, the efficiency of effectiveness with which it was executed, the relative merit of its production, etc.

Without an assessment and evaluation of present program performance, it is difficult to plan future performance. Occupational information systems can serve as a useful component in an overall management information system in VR for planning (see above) and evaluation. It can also serve as an aid in distinguishing program performance from counselor performance. A persistent difficulty in VR has been the blurring of this crucial distinction. This is exemplified in that for years the problem of financial disincentives was regarded as correctible or at least improveable by better casework techniques on the part of the counselor. Only

within the comparatively recent past has the realization emerged that financial disincentives are systemic, structural issues resulting from the manner in which other "relief" kinds of programs (e.g., disability pension, food stamps) are legislatively constituted; and that the remedy is likewise more likely to be found in legislative and programmatic reform rather than in the reforms of the VR service provider or recipient. To be sure, VR has not been alone in confusing the scene of its casualties with their cause. In this particular example, the scene is of poor rehabilitation casework success among those with cash and in-kind benefits, the assumption being that the cause of these casualties must be proximate to the point at which they are observed to occur.

Happily, there is an evolving (if as yet unverbalized) sense in VR that the whole of VR program performance might be different from, if not greater than, the simple sum of its constituent parts, i.e., discrete performance of individual counselors; that such program performance is the result of a complex interaction of counselor skill, client characteristics, managerial competence on the part of the agency, environmental factors (technological, attitudinal) to name but some of the influences.

Making the transition, the availability of a comprehensive OIS information system can substantially increase VR management's ability to assess and/or evaluate program performance vis-à-vis vocational outcomes.

Within the same state, vocational training opportunities may not be uniformly distributed. If OIS were sufficiently disaggregated so that at least broad regions within the state could be identified, the programmatic implication of this distribution could be examined.

- Is there an increased utilization of training services by VR in those areas of the state that are more richly served?
- Is there a relationship between availability of vocational training resources and VR outcomes?
- Are the entry earnings of a VR client placed in job X comparable to the average entry earnings in that job?
- What, on a two- to five-year follow-up, is the career ladder experience of VR clients initially placed in job Y as compared with the general experiance of those so placed?

- In addition to specific vocational preparations, are there other general characteristics of the client (e.g., literacy, prior work experience) that singly or in combination with specific vocational preparation produce more or less favorable outcomes--near-term? long-term?
- Is the very introduction and use of OIS by counseling staff associated with improved outcomes from the standpoint of such things as earnings, less IWRP revisions, greater efficiency in terms of time to placement, service cost?

The above is presented to illustrate the kinds of assessment/evaluative issues that can more adequately be addressed if an OIS were available.

Function 4: Budgeting and Funding Allocation Decisions

Earlier it was indicated that about $300,000,000 are annually spent by VR on vocational training and related services. If ready access were available to a comprehensive OIS, it would be easier for VR management to evaluate the resource allocation decisions associated with vocational training by these resources:

- budgeted internally as when VR agencies directly provide the training services, or
- supported through allocations of funds externally to other vocational training programs or facilities.

A recurring criticism of VR training is that it is not always targeted to real-life labor market situations so that upon completion, the individual may find him/herself prepared for a job that is obsolete, one where the manpower supply exceeds demand or one, which for a variety of other reasons, represents less than full realization of client potential.

The typical mode now used to evaluate training resource allocation is retrospective. In other words, evaluations are made by determining whether resource allocations have produced specific results. These retrospective evaluations then become the basis for the phase-in, phase-out

kinds of resource allocation decisions referenced earlier. The problems with such an approach are:

- human: disabled individuals have already suffered when past resource allocation decisions have later turned out to be less than adequate.
- economic: retrospective evaluations increase the lag time to the initiation of corrective action and resource redistribution.

The availability of an OIS with occupational demand, occupational supply, supply/demand analyses and related information could help VR management evaluate its resource allocation in a more prospective fashion. This of course presupposes that the OIS is implemented so as to allow for periodic (annual?) update of the kinds of vital information referenced above.

Function 5: Budget Justification

VR agencies must secure 20 percent state match to obtain the Federal 80 percent. Budget justification becomes, in most states, a predictable event, as regular as the return of the swallows to Capistrano. Since these budget presentations are typically before state legislative bodies, they are part of a political[1] process. The availability of an adequate, timely OIS could help induce political support for projected budgetary initiatives which, though sound, might otherwise be rejected.

For example, the phase-out of a less costly training program in favor of one that is more costly, is a budgetary initiative that becomes more supportable with hard data showing declining demand for the former higher wages (and therefore higher tax return) from the latter. Valid occupational information can support the reasonableness of expecting beneficial consequences to accrue from budgetary redistribution.

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[1]Political is here meant to refer to processes whereby public policy becomes formulated and carried out.

Function 6: Information Development

As indicated on page 34 a central task for rehabilitation at the service delivery level is the development of an individualized written rehabilitation program of services. It is difficult to exaggerate the complexity of this planning task especially when account is taken of the diversity in VR-eligible populations, goals and services. As indicated earlier, the character of service provision in vocational rehabilitation is somewhat different from traditional manpower programs in the greater need to tailor services to individual needs. An adequate occupational information system can provide a centerpiece around which additional key information can be organized and imparted to client-serving staff. This additional information could include job engineering and re-engineering, information update as to other accommodations for persons with handicaps; information regarding the legal status of handicapped individuals and the removal of barriers to employment.

Function 7: Policy Development/Implementation

An occupational information system can also be of assistance as a device for developing and implementing vocational rehabilitation policy. As has been indicated in the earlier section on Legislative History, evolution of the vocational rehabilitation program has been marked by increasing diversification in populations served, services provided, and nature of rehabilitation goals. In the midst of all this, over the last 20 years, there has been concern with the vocational aspect of the rehabilitation program. Program performance in this area has been considerably less than what it should be. As has been indicated earlier one of the responses to these criticisms has involved an attempt to specialize the job placement portion of the vocational rehabilitation process.

In the view of this writer, there is a considerable need to refocus specifically on the vocational aspects of the rehabilitation process at the policy level and not just at the casework level. There are relatively few places where a disabled person can go to receive expert career guidance. It is the author's impression that the services which employment security renders are typically inaequate for this task. As the school systems

become increasingly sensitive to and aware of the needs of disabled students, it is hoped that their capacity to respond to the particular career development needs of disabled students will increase. Even if this should occur, it still leaves out that substantial portion of the disabled population who are beyond school age.

The author fears that in emphasizing comprehensive services over an extended time period to a severely disabled group, that we may have inadvertently short-changed disabled individuals who, though not requiring such extensive services, are in very desperate need of sound personal evaluation, guidance, and career selection, ways in which technological advances can assist them in performing in jobs heretofore considered beyond their reach, etc. While appreciating the corrective effects of legislation-focusing services on severely disabled, there is some risk of over-correction and not providing services to those who, though severely disabled, may not be in need of multiple services, but only targeted vocational services. The sentiment is that such relatively "easy" cases should be left to other agencies.

The difficulty is, where are the other agencies? This writer is not aware of the consistent availability of quality, in-depth vocational guidance, career exploration services that are sensitive to the needs of disabled persons. Thus we may be in the peculiar position where a disabled person can get from VR vocational guidance, career exploration and targeted vocational services only as part of a multiple service package. In this writer's view, disabled persons should not be discriminated against simply because they need less than comprehensive services.

Rehabilitation as an overall system seems to be, at least at present, in the best position to provide the specialized kind of vocationally-specific services that are needed by many disabled individuals. In partnership with other agencies such as employment security, the development and utilization of an effective occupational information system can help clarify and implement an envigorated sense of vocational rehabilitation. In this manner, as a matter of policy, a balanced program can be fashioned; a spectrum, which has at one end independent living for those for whom a vocational goal is not currently feasible through to those severely disabled individuals for whom employment would be feasible pending provision

of multiple services for an extended time period. At the other end are those who, though severely disabled, are in need of career guidance, including assistance in understanding the vocational implications of their disability, assistance in career planning, information about what devices and aids can enhance their functions, vocational adjustment and personal skills training, occupational skill refinement or upgrading, placement and supportive post-employment services.

Chapter 4

REQUIREMENTS FOR OCCUPATIONAL INFORMATION IN VR AGENCIES

General Comments

Elsewhere (see papers by Herr and Odell), design requirements are set forth for an adequate OIS. Although they are writing from the perspective of career guidance and employment security system, this writer is impressed with how similar the requirements they set forth are to what is needed in vocational rehabilitation specifically and employment of disabled persons generally.

Geographic Detail. For reasons that were discussed earlier, occupational information that is available only on a national basis is all but useless is to VR. Odell quotes the National Commission on Employment and Unemployment Statistics as indicating that the lack of labor force data on a state and local level is a glaring weakness.

At the service delivery level, while it might be of some general value for a counselor-client to have an overall sense of national labor force trends and statistics, it is of much greater value to have this available on a local basis. This is especially important for physically disabled individuals whose linkage to social networks, and accessible housing and transportation may be as important as a job itself. Since there is wide variability among communities in the distribution of these characteristics, it may be particularly important for a disabled person to know (for example) not only whether a job will be avilable, but where. Components of an OIS dealing with things such as current occupational demand have virtually no value to the counselor-client unless available at the local level. Likewise, at the program planning level, unless labor force information is locally derived and locally relevant across occupations, its usefulness for management is marginal.

This writer lacks expertise in occupational information systems and is therefore unable to comprehend why resources have not long since been deployed to develop OIS's with local relevance.

Format

General. As Herr has noted, occupational information needs to be available in a variety of forms to meet multiple user needs: graphic, printed, audio-visual, tabular, etc. More substantially, the content of the information should be organized around the informational needs of the user, e.g., the informational needs of agency planners are different from those of counselors or clients.

Specific. More specific to vocational rehabilitation and disability is the need to format for persons with visual and hearing impairments. In this regard, the computerization of occupational information paves the way to use this technology for alternative sensory display: print for the hearing impaired and audio (digitized and synthesized voice) for the visually impaired.

Frequency and Periodicity. This will vary depending on:

- the particular component of the OIS under consideration
- audience
- intended use

The current occupational demand of an OIS is likely to require daily update if its intended use is to assist in immediate job search, e.g., what job leads should I track down today? On the other hand, the same information might require only monthly or quarterly update if its use is to keep track over time of changes in occupational demand, e.g., is the demand for occupation X increasing over time? Is it subject to seasonal variation?

In general, the greater the frequency in needed update, the more desirable (necessary?) computerized formats become. In this regard, the trend toward distributed data processing is beginning to have positive effects on VR. Whereas it used to be that VR had to use large, frequently unresponsive, centralized state computer systems, the decline in cost and increase in power of minicomputers have created a trend in which VR can now acquire computer capability in-house. The initial application of these machines will be for number crunching, fiscal, bookkeeping and

accounting applications. Beyond this, agencies should be encouraged to look to the use of the considerable surplus capacity of these machines for direct client applications, e.g., computer link-up with job bank and other OIS components. In this regard, the newer teletype devices used by deaf persons for phone communication can also function as printing terminals when linked via phone lines to computers.

I. Occupational Demand

Current Occupational Demand. If this is meant to convey something akin to ES's Job Bank, then it has significant utility for VR counselor and clients particularly toward the placement end of the VR process. However, as already indicated, information of this type, since it gets stale quickly, must be updated daily.

From the standpoint of VR management, this information would not need to be so rapidly updated. Rather, monthly or quarterly synopses of "past/current" occupational demands would be sufficient.

Projected Occupational Demand. At the case service level this information would be of value early on in the VR process at the point where client's employment potential is being evaluated, job objectives are being explored, and similar explorations are taking place. Projected demand becomes increasingly important to both counselor and client as the anticipated duration of the IWRP increases. Thus, if the IWRP involves four years of undergraduate training in, for example, computer science, then it becomes important to estimate four years hence what the demand is likely to be for systems analysts, computer programmers, computer engineers and the like.

At the program planning and management level, it is also of importance to have projections of occupational demand. As indicated earlier in this paper, management needs to anticipate significant shifts upward or downward in occupational demand in order to anticipate needed changes in budgetary and/or funding allocation decisions.

Expansion or Reduction in Occupational Demand. This is related to the immediately preceding comments. Expansion or reduction in occupational demand will have significant implications for facility development, negotiating or renegotiating cooperative agreements with third-party providers of vocational training, budgetary reallocation, and the like.

Replacement Demand. Replacement demand is particularly useful for individuals who, like handicapped persons, have difficulty with initial entry into the labor force. Occupations with high replacement demand might serve as a "first rung" on a career ladder.

Employment Demand. Here there needs to be a reiteration of what has already been said about the importance of locally derived and locally valid occupational information. If all that is available to vocational rehabilitation is an overall national picture of employment demands, it remains something of an abstraction with minimal utility from either a direct service or from a management perspective. In addition to being local in the geographic sense of the word, employment demand data need also be localized by industry.

II. Occupational Supply

It is the author's understanding that occupational supply information typically refers to such components as enrollment in and completers/leavers from educational or training institutions, qualified individuals who are currently unemployed, and other supply information including net migration, occupational transfers, and data about new entrants into the labor force. Such information does not appear to have much in the way of proximate applicability to vocational rehabilitation. Perhaps the most fruitful way to make use of these kinds of information is for those who have the expertise to distill out what the cumulative effect of the above-mentioned factors are on the aggregate supply side of the demand-supply equation.

III. Occupational Characteristics

This would probably be the most valuable component for VR in an overall occupational information system. Occupational characteristics include:

- earnings and benefits
- job duties
- work setting and conditions
- abilities and aptitudes
- licensing/registration requirements
- education/training skill and precision patterns
- education/training requirements
- demographics of workers
- career ladders
- major employers
- hiring channels
- occupational titles and descriptions

This writer has earlier noted the nature of the vocational rehabilitation process, the multiple levels within VR at which occupational information is useful, the particular need within rehabilitation of developing vocational objectives that are compatible with individual needs and limitations as well as with labor market realities, the need to maintain a bidirectional sensitivity in which jobs can be accommodated to individuals, not just the other way around. For reasons such as these the pivotal importance of occupational characteristics is self-evident. As has been indicated earlier, information about earnings and benefits may be of prime importance up front in the rehabilitation process when a disabled individual must evaluate whether it is to his or her economic advantage to pursue employment. In addition to the importance of estimating what earnings would be in a particular occupation, other benefits such as availability and extent of medical coverage can be of particular importance to disabled individuals as need for such services tend to be somewhat higher than for the nondisabled. (This writer is aware of instances in which disabled individuals have been successfully placed only to terminate their employment shortly after placement when it is discovered that they will lose the medical coverage they currently have through government-supported programs such as Medicare or Medicaid.) Therefore, in the development of an IWRP, the exploration of vocational objectives needs to be linked with factual information regarding the projected earnings and benefits that would accrue should employment be secured in a particular occupation. For effective counseling with a client, earnings/benefits data are needed on a local or labor market area basis and not just on a state or national basis. Timeliness is likely to be a particularly important issue here when (as the Framework document notes) inflation and union contracts may occasion frequent alterations in earnings and benefits.

Information about job duties has particular importance to planning and placement of persons with disabilities. If jobs are analyzed adequately in terms of functional abilities (see earlier discussion regarding pathology, impairment, functional limitations, and disability), if the job analysis includes only those characteristics that are essential to a job rather than extraneous job demands, then such job analyses provide an invaluable aid in:

- assessing the functional capacity of an individual to perform a particular job,
- assessing whether and how accommodations can be made of the job to the individual, and
- overall assistance in job reengineering either through technology or redesign of the manner in which work is performed.

Accurate information on job duties can also be of considerable use to VR as a quality control measure to evaluate the extent to which current training programs and their curricula are adequate preparation for a particular job.

Work settings and conditions involve information on the environment--physical, social, and psychological--in which occupational tasks are performed. This, like job duty information, is of particular value to persons with handicaps since the environment in which work is performed may constitute as much of a problem as the actual job duties themselves. For example, a dust-laden environment might present a serious problem to somebody with pulmonary impairment even though that individual could be capable of performing the job itself. Thus, in making accommodations to persons with handicaps, the environment may present as much a need for making accommodations as the job itself.

As with persons who are not disabled, information about requisite abilities and aptitudes is an indispensable component in an occupational information system. Once again, the point needs to be stressed that a statement of abilities and aptitudes should be stated in functional, competency-based terms, and should include only those functional abilities that are truly relevant to the particular job.

Information regarding licensing, registration and certification requirements are as important for career guidance and decisionmaking with the disabled individuals as they are for the general population. Licensing information is also useful because of its capacity to form the basis for curriculum development, and evaluation of vocational training programs that have been utilized in the past. As the Framework document notes, information from certifying agencies can also assist in the development of a better picture of the supply for particular occupations.

Education/training, both the nature of these requirements and the manner in which they are acquired, is of value to rehabilitation client and counselor in the earlier exploratory phases of the rehabilitation process. Some occupations (e.g., accounting) admit to varying levels of education and training (e.g., Bachelor's Degree in Accounting through to Certified Public Accountant) and these varying levels are related to different earnings and job duties and perhaps even work settings and conditions. Information of this type has obvious relevance to a disabled person's contemplating a particular course of rehabilitation.

Other occupational characteristics such as demographics of workers, career ladders, major employers, and hiring channels, have about the same relevance to vocational rehabilitation as they would to other general applications of career guidance and exploration.

IV. Complementary Information

This includes such things as inventories and descriptions of education and training programs, financial assistance information, labor force demographics and trends, as well as additional sources of occupational information. In addition to these kinds of information, this might be a particularly convenient place in which to insert the job accommodation/reengineering techniques mentioned in the earlier section dealing with OIS and technology. An occupational information system with such information built into it would represent a highly useful distribution channel for much of the technologies that are already developed but are gathering dust on shelves because knowledge of their existence and their applicability to the world of work is absent.

V. Supply/Demand Analysis

Supply/Demand Analysis refers to specialized technologies, e.g., classification structures for occupational demand and/or supply that as such are probably more within the province and interest of specialists in labor market analysis, manpower specialists, and the like. The author would, however, suggest that under such a rubric there could also be developed summary indicators by occupation that could conveniently and succinctly represent the relationship between supply and demand. Such summary information could be of particular use to vocational rehabilitation personnel. The author hesitates to make specific recommendations in this

area, but the kind of display suggested here may be akin to the way in which the consumer price index is represented as a function of relative earning power with 1967 as the base year. If some similar index could be developed for supply/demand analyses (e.g., indicators based on a ratio of supply to demand) then it could serve very useful summative purposes for vocational rehabilitation.

Chapter 5

AVAILABILITY/UTILIZATION OF OCCUPATIONAL INFORMATION

While there is variation from state to state, overall it can be said that the utilization of occupational information in vocational rehabilitation is conspicuous by its absence. What use is made of occupational information tends to be restricted to the Job Bank type of information supplied by Employment Security.

Other than this relatively specific application, extensive use has not been made of occupational information with the exception that some state agencies have purchased various commercially available vocational guidance/career exploration packages for use by counselors with their clients. To the best of this writer's knowledge, utilization of occupational information at the program level has been virtually nonexistent.

The reason for the lack of utilization rests in part within vocational rehabilitation itself, and in part with the inadequacies that have characterized past occupational information systems.

On the part of VR, it has only been in the comparatively recent past that concerted efforts have been made to develop the analytical and planning capacity at the state office level. Because of the historical primacy of the rehabilitation counselor in the rehabilitation picture, state agencies in the past have defined their role largely in terms of seeing to it that case service funds are made available to the local rehabilitation counselor and then by exercising supervisory guidance and surveillance of the rehabilitation counselor's performance. The primacy of the individualistic counselor model coupled with the need to develop highly tailored rehabilitation programs, has, along with other influences, thwarted the concept of program management as creating and enabling a number of facilitating environments.

On the OIS side, the lack of sufficiently localized occupational information undoubtedly has contributed to the general assessment that occupational information systems are eminently ignorable. In addition, there is the lack of integration of different occupational information sources which has hindered their utilization by VR management.